principle the most correct and natural, he agrees to the report chiefly because with O = 16 many of the weights most frequently used in calculations are represented by whole numbers, and hence these numbers are most conveniently used. Landolt adds that he hopes this report will lead to an international agreement as to the figures used.

In a recent paper in the *Journal für praktische Chemie*, W. Eidmann describes the action of metallic magnesium upon compounds containing nitrogen, especially upon the cyanids. At a red heat almost all compounds, inorganic and organic, which contain nitrogen are decomposed, generally with the formation of magnesium nitrid, Mg_3N_2. The cyanids of the alkalies and alkaline earths are decomposed without explosion, the carbid of the metal being formed. This, Eidmann says, shows that the ordinarily accepted formula of the cyanids, *e. g.*, $Ba\begin{matrix} C \equiv N \\ C \equiv N \end{matrix}$ is correct. In the case of those cyanids which decompose at a red heat, as those of zinc, nickel, lead, copper, etc., the reaction with magnesium is more violent and decomposition into magnesium nitrid, carbon and the metal ensues. In the case of those cyanids, as those of silver and mercury, which decompose below a red heat the liberated cyanogen reacts with magnesium with explosive violence.

A series of analyses of waters from wells near the sea-shore are published by P. Guichard in the *Bulletin Société Chimique*. The water in these wells rises and falls with the tide, while the composition of the water leads to the conclusion that there is no direct connection between the wells and the sea, and, hence, it follows, according to the author, that subterranean waters must be affected by the moon, even as the ocean. This conclusion will, doubtless, find many to dissent from it.

A description is given in the *Pharmaceutische Zeitung* by Alfred Zucker of the manufacture of whitelead by electrolysis, at Dellbrück, according to the Luckow process. The electrolyte is a 1½% solution of 80% sodium chlorid and 20% sodium carbonate. The anode is soft lead, the kathode hard lead. The current is 0.5 ampère per square centimeter at 2 volts. Water and carbon dioxid are carefully added as the electrolysis proceeds. With care as to the strength of the electrolyte, a purity of whitelead is obtained not hitherto reached. The hygienic regulations of the factory are worthy of mention. Every operative receives daily one liter of fresh milk, and at the conclusion of his daily work must clean very thoroughly his hands, finger nails, etc. In addition he receives Glauber's salts, and every fortnight must take a complete warm bath in water which contains a certain amount of liver of sulfur. By these precautions all cases of saturnine poisoning have been avoided for several years.

Although not under the head of inorganic chemistry, mention may be permitted of a description of the manufacture of artificial silk in a recent number of the *Zeitschrift für Angewandte Chemie* from the pen of H. Wyss-Naef. The first practical use of the process was in 1889. The raw material is carded cotton which is first converted into nitrocellulose by a bath of strong nitric and sulfuric acids. After washing and drying it is dissolved in a mixture of alcohol and ether. This collodion is then spun through openings .08 mm. diameter. The alcohol and ether evaporate almost instantly on spinning and the material is carefully dried. It is then treated by a secret process to reduce the nitro groups, ammonium sulfid being probably the reducing agent used. The silk is then bleached with chlorin and is ready for the market.

J. L. H.

CURRENT NOTES ON METEOROLOGY.

THE THEORY OF CYCLONES AND ANTICYCLONES.

A publication of unusual interest, containing conclusions of the greatest importance in meteorology, has been issued as *Bulletin* No. 1 (1899), of the Blue Hill Meteorological Observatory ('Studies of Cyclonic and Anticyclonic Phenomena with Kites,' by H. Helm Clayton). This is a study of the results obtained during the kite flights of September 21st–24th and of November 24th–25th last, and it will aid materially towards once more strengthening belief in the older Ferrel, or *convectional* theory of cyclones and anticyclones, as opposed to the newer Hann, or *driven* theory. Lack of space

prevents mention of many of the striking facts set forth in this *Bulletin*. The flights of September 21st–24th brought down records from altitudes of 2,000 to 3,400 meters, in a well-marked anticyclone, and in a succeeding cyclone which followed the same track. The temperature near the center of the anticyclone was the same at 2,100 meters as at 1,200 meters, and the humidity at the greater altitudes was excessively low. These results agree with those previously found in similar conditions. The axis of the anticyclone was inclined backwards, the high pressure occurring later at high than at low levels. Up to 3,000 meters the temperature of the air was higher on the day of the cyclone than on the day of the anticyclone—a normal condition at Blue Hill, as previous kite ascents have shown. A further notable discovery is that cyclonic and anticyclonic circulations observed at the earth's surface in this latitude do not seem to embrace any air movement at greater altitudes than 2,000 meters, except in front of cyclones. Above 2,000 meters there seem to be other poorly developed cyclones and anticyclones, with their centers at entirely different places from those on the earth's surface, and with different wind circulations.

On November 24th–25th the kite meteorograph was sent up near the center of a cyclone and in a succeeding anticyclone. From sea-level to 2,300 meters the temperature was 13°–24° F. higher on the day of the cyclone (November 24th) than on the following day. The results of the observations on November 24th–25th also go to show that when the cold in the rear of a surface cyclone is exceptionally severe, the axis of the cyclone is inclined backward so sharply that the circulation breaks into two or more systems. Thus there come to exist a surface cyclone, a mid-air cyclone and an upper-air cyclone. On November 25th, at 3,000 meters, there existed a cold-center cyclone, in which the air had a descending component of motion, as indicated by the low humidity.

The results of the careful study made by Mr. Clayton lead him to the view that the *convectional* theory of cyclones is the true one. This *Bulletin* again bears evidence to the admirable work which is being done by the staff of the Blue Hill Observatory, and to the important contributions which Mr. Clayton and his assistants, with Mr. Rotch's liberal support, have made to meteorology.

CARBONIC ACID IN DEATH GULCH.

THE amount of carbonic acid in the atmosphere, which, under ordinary conditions, averages about 0.03%, may, in exceptional circumstances, attain a considerably higher percentage. In certain volcanic districts the amount of carbonic acid may be large enough to cause the death of animals which stray into the hollows where, owing to its density, the gas collects. The Grotto del Cane, near Naples, is a region of this sort. Another is Death Gulch, in the Yellowstone National Park. In an account of a recent trip in the Park, in *Appleton's Popular Science Monthly* for February, Jaggar reports his discovery, in Death Gulch, of the carcasses of eight bears, all of which had doubtless been asphyxiated by the excessive amount of carbonic acid in the air.

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ZOOLOGICAL NOTES.

NEOMYLODON LISTAI.

DR. EINAR LÖNNBERG describes at length* some portions of skin found in a cave at Eberhardt, near Last Hope Inlet, 51° 35′ S., 72° 38′ W., in the Territorio de Magallanes, Chile, and obtained by the Swedish expedition which visited Tierra del Fuego in 1896. The cave, located a few kilometers from the coast and about 500 feet above sea-level, was about 600 feet deep and 150 feet wide at the entrance. It was discovered by some farm laborers, who promptly destroyed the human skeletons found in the cave, although they fortunately preserved some pieces of thick, strange-looking skin, and the sheath of a claw found partly imbedded in the stalagmitic deposit of the floor. The claw and two pieces of skin were secured by Nordenskjold; the smaller piece measured about 7×15 cm.; the larger, irregular in shape, 50×76 cm., is believed to be from the left fore leg. The small

* Reprint from *Wissenschaftl. Ergebnisse Schwedischen Expedition nach den Magellansländern unter leitung von Otto Nordenskjold.*